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ABSTRACT

This study investigated the extent and nature of sex bias in Indiana's vocational education programs. It also examined sex bias in relation to selected factors (motivation, psychomotor and language skills, I.Q., interest, reality, and sex-role perception). Enrollments in vocational programs in twenty-four area vocational programs were analyzed. One hundred students (twenty-five females and twenty-five males in traditional programs, and twenty-five females and twenty-five males in nontraditional programs) responded to selected commercial tests and to the Bem Sex Role Inventory (BSRI). School personnel were given a ten-item survey on practices and policies for eliminating sex bias in vocational programs. Findings indicate the following: (1) the number and type of vocational courses offered and the selected factors identified for this study appear to have little influence on an individual selecting a nontraditional program; (2) sex-role-self-perception appears to affect the selection of nontraditional programs. The findings suggest that additional efforts are needed to eliminate sex bias in vocational programs, especially in the areas of teacher attitudes, employer attitudes, and student nonsex-bias orientation to occupations. (Author/JH)

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Sex Stereotyping: Analysis of Students Enrolled in Vocational Programs in Indiana

Final Report

by

Betty Sawyers

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U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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Indiana State Board
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ABSTRACT

The Problem and Objectives

This study focused on identifying the extent and nature of sex bias in vocational education programs in Indiana. It also examined sex-bias in relation to selected factors; motivation, psychomotor skill, language skills, I Q, interest, reality and sex-role perception.

The objectives of the study were to:

(1) Define and analyze the enrollment patterns based on sex that currently exist in Indiana area vocational centers.

(2) Determine the affect of differences related to the individual's IQ, academic achievement, vocational maturity and home influences between students enrolled in vocational instructional programs where the predominate sex is the same and in programs where the predominate sex is opposite.

(3) Develop guidelines for communication relating to vocational instructional programs directed toward compliance with federal regulations of Title IX legislation.

Methodology

Enrollments in vocational programs in 24 area vocational programs were analyzed. One hundred students; 25 females in traditional programs, 25 females in nontraditional programs, 25 males in traditional programs and 25 males in nontraditional programs responded to selected commercial tests and to the Bem Sex Role Inventory. School personnel indicated practices and measures to eliminate sex stereotyping in vocational programs.

Results and Conclusions

The number and type vocational courses offered appear to have little affect on individuals selecting a nontraditional training program. Selected factors, I Q, language, reality, motivation and psychomotor appear to have little influence on an individual selecting a nontraditional vocational training program. Ones sex-role self perception appears to have an affect on the selection of a nontraditional program.

Additional effort is needed to eliminate sex bias in vocational programs, especially in the areas of teacher and personnel attitude, employer attitude and in providing activities that allow students a non sex orientation to occupations.

INTRODUCTION

Background

In the years following World War II, there has been a global struggle - a cold war - between the ideologies of communism and democracy. Opponents in such an encounter are alert to identify differences in stated principles and ensuing practices. Democracy's foundation is based on governance by the governed and equality for individual citizens. Casual examination revealed a distinct difference between democratic philosophy and practice relating to equality of treatment based on the sex of the citizen.

Democracy allows to a high degree freedom of speech. Feminists in this decade have become more articulate and aggressive in their efforts to obtain equity. They have been, to a measure successful, in areas where laws have been enacted. Opportunities in education and employment have become more equalized with the passage of The Higher Education Act of 1972 which prohibits sex discrimination in all federally assisted education programs.

The more recent Title IX legislation is broader in scope and defines in a precise manner the measures that must be taken to eliminate sex-bias in all private and public pre-schools, elementary and secondary schools, vocational schools, community colleges and institutions of higher education, which recieve federal funding in any program or in any form. Sex-bias must be eliminated in such functions as: admissions procedures, graduation requirements; curriculia; student counseling; single-sex courses and others.

Related Studies

Historically and traditionally, vocational education has been stratified on the basis of sex-role stereotyping. Enrollments in specific vocational education instructional programs are, and have been in the past, populated by a predominate sex. Sex-role stereotyping is reinforced in education by teachers, in textbooks, in single-sex subjects and through defining, especially for the female, psychological health in terms of degree of adjustment to the femine sex role.

Recent research related to sex-stereotyping has pursued several lines of investigation namely:

- differences in earning power related to sex
- surveys of curriculum materials, textbooks and career guidance materials relative to sex bias
- the relationship of vocational interests to career choices and
- the effect of differential treatment of boys and girls, men and women in education and at work.

Gornick and Moran 1971, Suniewick 1971, Kievit 1972, and Vetter 1973 found that in a variety of educational and occupational situations the sexes received differential treatment that would tend to produce and reinforce sex-role stereotyping.

Broverman, Vogel, Broverman, Clarkson, and Rosenkrantz reported a study in 1972 entitled Sex-Role Stereotypes: A Current Appraisal. They summarized their research:

> Women are preceived as relatively less competent, less independent, less objective, and less logical than men; men are perceived as lacking interpersonal sensitivity, warmth and expressiveness in comparison to women, moreover, stereotypically masculine traits are more often perceived to be desirable than are stereotypically femine characteristics.

A number of investigations have focused on the representation of sex-roles in elementary level school materials. Researchers found that in general, men were depicted in a working role. Often their job was readily identifiable. Women were not pictured as often as men and in many instances they were shown in a supporting role. Based on actual employment patterns, there was an over-representation of women in professional occupations and an under-representation in clerical, sales, skilled and unskilled jobs.

In other surveys of school reading texts it has been found that men and boys were presented in active mastery of the environment at a ratio of four to one over girls. Biographical stories were overwhelmingly male. Of 173 occupations identified in elementary reading texts in New Jersey schools, 147 were indicated for men, 26 for women.

Birk, Cooper, and Tanney reported in 1973 an analysis of illustrations that appeared in the Occupational Outlook Handbook, the Encyclopedia of Careers, the SRA Occupational Briefs and an assortment of other career information materials. They found that 67 percent of the illustrations were of males, 26 percent were of females and 7 percent were of mixed sex individuals. Women were depicted in "helping" roles in 35 percent of the pictures of women; men were pictured in the "helping" roles in 35 percent of the pictures of women; men were pictured in the "helping" role in only 12 percent of the pictures of men.

Vetter, Stockburger, and Brose in 1974 assessed all career guidance materials listed in the Vocational Guidance Quarterly after 1970, "Current Career Literature" bibliography and in two bibliographies prepared by the VT-ERIC Clearinghouse. They summarize their findings with these statements:

> To a greater or lesser extend, almost all of the materials were found to be stereotyped. Approximately 75 percent of the illustrations of people of one sex were men. This same percentage was found in the use of male proper names compared with female proper names. In both samples, the number of role models of men was significantly greater than the number of role models of women. In more detailed analyses, it was found that 33 percent of the men and 4 percent of the women were pictured outdoors. Men and women were illustrated and mentioned in significantly different proportions in the ten general census categories of occupations. Women were over-presented to a greater extent than men in the professional occupations category, although men were also overrepresented in the professional category.
>
> The pronoun "he" was used more frequently than either "you" or "she", with "she" being used the least frequently. Thirty-six percent of the materials mentioned something about the fact that women have different career patterns than men and 14 percent specified that women were paid differently than men. Thirty percent of the materials mentioned something about working mothers in the text.

In studies conducted in Ohio, Minnesota, and Indiana, Stramsdorfer 1974, Pucell 1974, and McFadden and Richardson 1974 found discriminatory practices reflected in earnings of male and female vocational graduates receiving comparable training.

In 1977 New Educational Directions, Inc., completed research conducted in Indiana entitled Sex As a Determinant in Vocational Choice. This research was concerned with incongruities attributable to sex stereotyping between vocational choices and measured individual interests. It was found that few students of either sex had chosen a vocational program traditionally populated by the opposite sex, regardless of factors influencing choice. Students were aware of changes resulting from the Women's Rights Movement. They could identify practices in the environment that nurtured sex stereotyping. The prevailing pattern of vocational preparation in traditional career areas suggested that change has not progressed beyond the awareness stage.

Dittman in a study: Sex-Role Perceptions of North Dakota Vocational Educators assessed sex-role perceptions using the Bem Sex-Role Inventory (BSRI). The researcher found that vocational

teachers, counselors, and administrators were consistent in their sex-role perceptions of males and females. Subjects perceived males as masculine typed and described females as feminine typed suggesting a predominantly stereotyped view. Female subjects perceived themselves as being less sex-typed than did males. They also rated themselves as androgynous while describing other females as near feminine and males as masculine.

Findings in this study suggested that perceptions measured unavoidably influence the ways in which these educators view present and future vocational possibilities for their students. Stereotyped sex-roles limit, directly and indirectly, the career and work aspirations and preparation of learners.

The Problem and Objectives

The Education Amendments of 1976, Title II Vocational Education specify as one of its purposes to: *overcome sex discrimination and sex stereotyping in programs* (including homemaking) *thereby furnishing equal education opportunities for both sexes.* Educational agencies offering vocational programs, in order to carry out the purposes of Title II and to comply with the terms of Title IX will need to formulate guidelines stating precise procedures and policies relating to vocational programming. This study focused on identifying the extent and nature of sex bias in vocational education programs in Indiana. It also examined sex-bias in relation to selected factors; motivation, psychomotor skill, language skills, I Q, interest, reality and sex-role perception.

The objectives of the study were to:

(1) Define and analyze the enrollment patterns based on sex that currently exist in Indiana area vocational centers.

(2) Determine the affect of differences related to the individual's IQ, academic achievement, vocational maturity and home influences between students enrolled in vocational instructional programs where the predominate sex is the same and in programs where the predominate sex is opposite.

(3) Develop guidelines for communication relating to vocational instructional programs directed toward compliance with federal regulations of Title IX legislation.

Methodology

Vocational program enrollments as recorded in the Indiana State Board for Vocational and Technical Education (SBVTE) offices were examined to identify area programs that had courses offering career preparation in three or more vocational service areas. To be included in the population, an area vocational program had to have at least one course of preparation considered traditionally male populated and at least one considered traditionally female populated. The researchers categorized the courses into traditional male and female courses. Seven courses offered were considered to be neutral relating to sex orientation (See Appendix A). From this analysis area programs, which had more than 25 students of one sex enrolled in vocational courses traditionally populated by the same or opposite sex, were identified. No single area program that showed 25 females enrolled in non traditional courses could be utilized. Telephone contact indicated errors in reporting, withdrawal from the course, or inability to arrange time or space because courses were offered in separated facilities. Three area programs were randomly selected from which three groups of respondents were identified. In order to obtain females enrolled in traditionally populated male courses, two area programs were identified and all females so enrolled formed the sample for this category (Table 1).

An attempt was made to obtain 25 females and males enrolled in vocational courses traditionally populated by their respective sexes. An additional 50 students were identified: 25 males enrolled in traditionally female vocational courses and 25 females enrolled in traditionally male courses.

A researcher arranged date, time and space through the vocational director to administer standard tests and instruments to identified students. Necessary permission and consent forms were supplied and collected prior to administration of the instruments. Student data was collected in the spring and fall semesters of 1977.

Complete data was obtained from 92 subjects for eight measures. Due to absence from school on testing day, failure to complete test due to time (school ended) or refusal to complete tests coming at the end of the testing period, data from 8 subjects was not included in the analysis.

Administrators, vocational directors and guidance counselors from 13 of the area programs were asked to respond to a ten item survey concerning practices and procedures influencing elimination of sex stereotyping in their vocational programs. Responses to this instrument were collected early in the second semester of 1978.

Table 1 Rank Order Distribution of Students in 24 Area Vocational Programs by Sex and Type Course

Males in Traditional Male Course	Females in Traditional Female Course	Males in Traditional Female Course	Females in Traditional Female Course
94	63	0	0
113	85	0	2
119	99	1	3
159	103	1	3
186	113	1	5
213	124	3	7
235	139	9	8
237	147	10	9
253	198	10	9
285	225	10	9
288	237	10	10
339	272	13	12
350	295	17	14
398	367	20	16
401	442	23	17
451	463	25	19
465	476	25	19
465	492	36	24
516	554	55	28
550	586	57	29
619	653	95	33
712	659	169	38
919	927	188	48
1105	1176	359	69
9472	8895	1137	431

The Instruments

Instruments used in this research include the: Wide Range Intelligence and Personality Test (WRIPT): The Vocational Interest, Experience and Skill Assessment Test (VIESA); Bem Sex Role Inventory (BSRI): and a ten item survey on eliminating sex bias in vocational education.

The WRIPT, developed by Guidance Associates is a standardized Scale of Psychometric Tests composed of ten individual subtests. The scale includes verbal, pictorial, numerical, muscular, spatial and perceptual abilities. The content of the tests have been selected to combine samples of academic achievement and samples of practical situations. The WRIPT was normed separately for males and females for subjects ages 9 1/2 to 54 years of age.

VIESA is a self-scored inventory of career-related interests, skills and experiences. It is designed to expand self-awareness; develop career awareness; identify personally relevant career options and explore and evaluate student career options. VIESA is both a teaching module and an assessment instrument. Norms are based on a carefully chosen sub-group of a nationally representative sample of thirty-two thousand students in 200 schools located throughout the United States.

The BSRI measures the degree of sex-role stereotyping in a person's self-concept. The instrument contains 60 personality characteristics describing individuals. A 7 point scale is utilized by the subject to indicate the degree each characteristic describes themself. Subjects who score above the masculinity median and below the feminity median are classified "masculine"; those who score above the feminity median and below the masculinity median are classified as "feminine"; those who score above both medians are classified "androgynous"; and those who score below both medians are classified as "undifferentiated".

The instrument used to collect data related to practices and policies for eliminating sex bias in vocational education consisted of 10 statements describing activities, policies and procedures. Respondents indicated the degree to which each statement represented their school (Appendix B).

Findings

Findings in this study will be discussed in five categories: influence of the availability of training programs for occupational preparation; sex-role perception and occupational preparation choice; intelligence and personality as factors in occupational preparation choice; individual interest as an influence in occupational preparation choice; and program practices and policies that influence vocational training choices.

Available Vocational Training Programs

Statistics compiled by the Indiana Department of Public Instruction show that 110 different vocational programs are available to persons to train them for entry into occupations or for re-training to improve skills of persons already employed. These programs are grouped under 9 service areas; Agribusiness, Business and Office, Distributive Education, Health Occupations, Consumer and Homemaking, Occupational Home Economics, Technical, Trade and Industrial and Pre-Employment Vocational Education.

Some area programs have a large number of training programs, offering the student a wide variety of occupational choices. Other programs are more limited in scope. Area vocational programs included in the study ranged from a low of 9 training programs in one area program to a high of 29 training programs in the largest area program. Available records did not allow the researcher to identify the number or types of specific occupations any given training program provided.

In reporting findings, labeling as utilized in state records was used to distinguish training programs. In some instances the program listing was general. In other cases the program name was quite specific. There were more programs that prepared students for occupations traditionally populated by males than programs for traditionally female populated occupations. However, in the programs sampled, students had a variety of choices for training in both types (Appendix C).

Distributive education, health occupations, general clerical, mechanics, tool and die, body fender and welding were courses offered in 75% or more of the area programs. Data processing, graphic arts, trades and industry, child care, food management, drafting, industrial electricity, clothing and construction maintenance were courses available in at least half of the area programs. Twenty-eight other training programs were available in one or more area vocational programs included in this survey.

Choices that reflect career preparation in occupations traditionally populated by members of the same sex appear to be influenced by factors other than limited types of training programs.

Sex-Role Self Perception

Research has provided evidence that self perception begins early through parental expectations with reinforcement in the school environment. A stereotype or socially ascribed role becomes a permanent attitude very resistant to change. Such an attitude influences individual interactions, behavior patterns and choices.

Subjects in this study were analyzed as to their sex-role perception and their occupational training program (Tables 2 & 3).

Table 2 Female Sex-Role Self Perception

	Traditional Vocational Programs		Non-Traditional Programs	
Subject	F. Score Mean	M. Score Mean	F. Score Mean	M. Score Mean
1	6.2	5.1	5.65	4.0
2	5.9	5.25	5.55	4.55
3	5.75	5.2	5.5	5.15
4	5.65	4.9	5.3	4.85
5	5.6	3.9	5.2	3.95
6	5.55	4.5	5.1	5.15
7	5.45	4.65	5.1	4.85
8	5.45	5.05	4.9	4.85
9	5.4	4.2	4.8	4.35
10	5.35	3.5	4.7	5.1
11	5.3	4.6	4.7	4.75
12	5.3	5.1	4.7	5.2
13	5.25	5.1	4.55	3.85
14	5.25	4.6	4.55	3.95
15	5.2	5.65	4.4	5.55
16	5.2	5.15	4.3	5.8
17	5.1	4.75	4.3	5.6
18	5.05	4.3	4.05	5.4
19	5.0	5.4	3.85	2.85
20	4.9	2.95	3.65	4.75
21	4.85	4.9	3.55	4.6
22	4.45	3.5		
23	4.15	4.9		
24	4.15	3.45		
25	4.05	4.3		
26	3.9	2.95		

M = Male
F = Female
Median score M 4.75
Median score F 4.55

Sex-Role Self Perception

Research has provided evidence that self perception begins early through parental expectations with reinforcement in the school environment. A stereotype or socially ascribed role becomes a permanent attitude very resistant to change. Such an attitude influences individual interactions, behavior patterns and choices.

Subjects in this study were analyzed as to their sex-role perception and their occupational training program (Tables 2 & 3).

Table 2 Female Sex-Role Self Perception

	Traditional Vocational Programs		Non-Traditional Programs	
Subject	F. Score Mean	M. Score Mean	F. Score Mean	M. Score Mean
1	6.2	5.1	5.65	4.0
2	5.9	5.25	5.55	4.55
3	5.75	5.2	5.5	5.15
4	5.65	4.9	5.3	4.85
5	5.6	3.9	5.2	3.95
6	5.55	4.5	5.1	5.15
7	5.45	4.65	5.1	4.85
8	5.45	5.05	4.9	4.85
9	5.4	4.2	4.8	4.35
10	5.35	3.5	4.7	5.1
11	5.3	4.6	4.7	4.75
12	5.3	5.1	4.7	5.2
13	5.25	5.1	4.55	3.85
14	5.25	4.6	4.55	3.95
15	5.2	5.65	4.4	5.55
16	5.2	5.15	4.3	5.8
17	5.1	4.75	4.3	5.6
18	5.05	4.3	4.05	5.4
19	5.0	5.4	3.85	2.85
20	4.9	2.95	3.65	4.75
21	4.85	4.9	3.55	4.6
22	4.45	3.5		
23	4.15	4.9		
24	4.15	3.45		
25	4.05	4.3		
26	3.9	2.95		

M = Male
F = Female
Median score M 4.75
Median score F 4.55

Table 3 Male Sex-Role Self Perception

Subject	Traditional Vocational Programs M. Score Mean	F. Score Mean	Non-Traditional Programs M. Score Mean	F. Score Mean
1	7.0	6.7	5.8	4.2
2	6.2	3.55	5.35	3.95
3	6.0	4.6	5.15	3.95
4	5.8	4.2	5.15	3.85
5	5.7	4.7	5.1	4.15
6	5.35	5.15	5.1	4.75
7	5.35	2.35	4.85	4.55
8	5.1	2.95	4.85	4.65
9	5.05	4.9	4.65	3.6
10	5.0	4.45	4.65	5.15
11	4.9	3.95	4.65	3.85
12	4.85	3.4	4.55	4.45
13	4.75	4.05	4.4	4.15
14	4.65	4.15	4.4	4.45
15	4.6	2.35	4.4	4.45
16	4.6	3.7	4.4	4.55
17	4.5	3.5	4.25	3.95
18	4.45	5.15	4.15	3.35
19	4.3	4.25	4.05	3.75
20	4.25	3.35	4.0	4.45
21	4.1	5.0	3.9	3.5
22	3.9	4.1	2.9	3.35
23	3.8	3.2		

M = Male
F = Female
Median Score M 4.75
Median Score F 4.55

Females who were preparing to be machinists, welders, auto mechanics, printers and drafting artists showed a more masculine and androgynous self-perception than did females who were enrolled in training programs preparing them for occupations as nurses aides, cosmotologists, secretaries, and commercial sewing machine operators.(Table 4).

Table 4 Sex-Role Classification - Females

Feminity Score		Masculinity Score: Above Median	Masculinity Score: Below Median
	Above Median	Androgynous No. N.T.* 8 No. T.** 12	Femine No. N.T. 4 No. T 9
	Below Median	Masculine No. N.T. 5 No. T 1	Undifferentiated No. N.T. 4 No. T. 4

Total females in *nontraditional programs 21
Total females in **traditional programs 26

Males who were enrolled in vocational training programs preparing for occupations in consumer and homemaking and home economics related occupations had fewer falling in the classification "masculine" and "androgynous" and more in the classification "undifferentiated" than males who were in training programs developing entry level skills in trade and industrial, welding, stock crew, and warehouse managing (Table 5).

Table 5 Sex-Role Classification - Males

		Masculinity Score	
		Above Median	Below Median
Feminity Score	Above Median	Androgynous No. N.T.* 3 No. T** 5	Feminine No. N.T. 1 No. T. 2
	Below Median	Masculine No. N.T. 5 No. T. 8	Undifferentiated No. N.T. 13 No. T. 8

Total males in*nontraditional programs 22
Total males in **traditional programs 23

Based on the results of the data from the sex-role inventory students appear to be influenced in their vocational preparation choice by their sex-role self perception.

Selected Factors and Vocational Training Program

Career choice either in a professional or nonprofessional occupation is influenced by numerous factors; home, family, socio-economic conditions, individual interest - motivation, physical-psychological orientation, geographical environment and many others. Students when asked to identify influences which affected their career choice are often unable to name specific people, events or pressures that gave direction to their choice. Research conducted in Indiana in 1976 by New Educational Directions found that 41% of the respondents indicated that sex sterotyping had not influenced their career choice, while 23% felt that it had limited their choice. Five factors were identified, in this research, as primary influences on student career plans. They were: (1) experiences related to high school course work or through part-time or summer jobs; (2) personal interest; (3) role models such as parents, siblings, other relatives and friends; (4) economics, in the sense that choices focused on occupational areas that individuals felt would provide maximum earning potential within the possible training limitations; and (5) peer/relative reinforcement in the form of praise or rejection related to a tentative occupational choice.

In the research being reported here other factors were considered and measured as possible influences upon vocational training choices. Intelligence is a general factor and is common to all abilities measured in an individual. Intelligence represents the quantity, variety and speed of responses available to an individual. It is the level of maximum personality integration.

Subjects in this study had I.Q. scores that ranged from 63 - 122. The median for I.Q. scores for females in both traditional and nontraditional vocational training programs was 106. This was a somewhat higher median than for males. A score of 88 was the median for males in nontraditional vocational programs. The median score for those in programs traditionally populated by males the median score was 91 (Table 6).

Table 6 I.Q. Scores by Sex and Vocational Program

Female Traditional	Female Nontrad.	Male Tradiitonal	Male Nontrad.
63	78	66	75
89	84	75	76
90	89	77	79
90	89	77	83
91	92	79	83
93	97	84	85
96	99	89	85
98	99	89	85
99	100	90	86
100	105	91	86
105	106	91	88
106	111	94	89
106	111	94	89
107	112	94	90
107	113	94	92
108	117	95	95
109	117	99	101
109	121	99	102
109	121	102	106
110	121	104	107
110	122	108	111
113		109	113
113		119	
119			
121			
121			

A greater number of females scored in the average or high average classification than males. Only 12.8% of the females had scores below the average classification. Almost half of the males, 46.6%, had I.Q. scores below the average classification.

The following verbal classification was given in the test manual to interpret individual I.Q. scores.

Intelligence Score Range	Classification	Percentile
141 and above	very superior	99.3 to 100
126 to 140	superior	94 to 99.2
111 to 125	high average	74 to 93
90 to 110	average	27 to 73
75 to 89	low average	7 to 26
60 to 74	inferior	0.8 to 6
59 and below	very inferior	0 to 0.7

Intelligence does not appear to be a factor that influences individuals to choose a vocational program that is populated by members of their sex. Neither does it appear to affect the choice of an occupation that has traditionally been dominated by members of the opposite sex.

Other Factors

Four other factors were measured: (1) the language factor; (2) the reality factor; (3) the motivational factor and (4) the psychomotor factor. The manual for the WRIPT states that the factor score is not a simple statement of fact but is rather a score that has been worked over from the results of many behavior samples. The language factor represents the communication skills with the intelligence effect removed. It involves sensory and perceptual areas of behavior which either limit or enhance the free expression of capacity. Individuals with high language factor scores are socially conforming, culturally assimilated, temperamentally sedentary and academically successful. They may use reading and academic studies as escapes from the more flexible and practical events of daily living conditions. Individuals with unsatisfactory language factor scores usually do not care for school, especially the academic aspects of it. They feel the need for direct interaction with people and things and are emotionally active, expressive and demonstrative.

The manual describes the reality factor as being a personality aspect independent of a person's intelligence. It determines the degree of behavior relevance. It is the "ability" to do the right thing at the right time, in the right place. Individuals with high reality scores may be viewed as being persons of action not ideas. They are socially outgoing and relatively insensitive; friendly with a great need for company. Fears, daydreams, guilt feelings and aggressions are usually appropriate to the demands of daily actions. Individuals with low reality factor scores would exhibit characteristics of an opposite nature.

The motivational factor is related to that phase of the personality that is associated with degrees of frustration tolerance, freedom from distraction, control, self-discipline, goal directed effort, drive and a sense of responsibility. This score relates to such functions as attention, memory, concentration, self-application and desire to accomplish goals.

Individuals with low motivational factor scores often avoid routine activity, devote much physical and mental energies to fun and play, avoid competition and cooperative activities, are usually deficient by comparision with capacity in nearly all basic school subjects and impress people favorably during initial contacts. They become disturbed on the job at the first sign of frustration and find plausible excuses for problems or tasks omitted.

Persons with high motivational factor scores have attributes opposite to those just listed. A high score in this factor does not automatically result in good adjustment. If the movitational cluster is the highest of factor scores, the individual may be over-controlled, limited in flexibility and conscientious to the point of anxiety.

The psychomotor factor is a critical one in learning to write, spell, perform gymnastic exercises, to handle equipment and to engage in sports. Individuals with unsatisfactory psychomotor factor scores exhibit unreliable judgments regarding matters of space, direction, position and arrangement of physical objects. They are inexperienced in the use of tools, machines and mechanical equipment and may fear any involvement with them. Those with low scores in this factor may develop numerous rationalizations as to why they should not have to perform some activity. They may say they are in ill health or are quite fatigued. Persons scoring high in the psychomotor factor are energetic, well coordinated, enjoy manual work, needs few rest periods and has little difficulty in utilizing their physical assets to complete appropriate activities.

The following classification is presented in the test manual for evaluating the group factors.

Factor Score	Classification
71 and above	very superior within capacity
64 - 70	superior within capacity
57 - 63	high average within capacity
44 - 56	average within capacity
37 - 43	low average within capacity
30 - 36	inferior within capacity
29 and below	very inferior within capacity

Females in Traditional and Nontraditional Vocational Programs.

An examination of factor scores reveals that females in traditional vocational programs are very much like those enrolled in nontraditional programs regarding the four factors; language, reality, motivation and psychomotor (Appendix D). Five females in traditional programs scored in the high average within capacity in the language factor. No females in the nontraditional programs scored higher than average in this factor. Thirteen females in nontraditional vocational programs scored in the very inferior or inferior within capacity compared to nine females in traditional vocational programs scored in the average and low average within capacity classification. Those in traditional programs were quite similar; 29.2% scored in these two categories (Table 7).

Males in Traditional and Nontraditional Vocational Programs.

There is little to differientiate males in traditional vocational programs from those in nontraditional programs (Appendix E). Slightly more males in nontraditional vocational programs scored in the high average within capacity on the reality factor. Five males in nontraditional programs scored in the highest three classifications of the motivational factor compared to only one male enrolled in a traditional program (Table 7).

The scores of the subjects, on the four factors, language, reality, motivation, and psychomotor do not indicate that these characteristics influence to any marked degree the choice to engage in career preparation in an occupation predominately populated by members of the same sex. These factors do not appear to influence a career choice in an occupation traditionally populated by the opposite sex.

Table 7 Factor Scores, Females, Males, Nontraditional; Females, Males, Traditional Vocational Training Programs

	Language				Reality				Motivational				Psychomotor			
	FNT	F	MNT	MT	FNT	FT	MNT	MT	FNT	FT	MNT	MT	FNT	FT	MNT	MT
71 +	-	-	1	1	2	1	-	-	-	-	1	-	1	1	-	-
64-70	-	-	-	-	-	1	-	-	-	1	1	-	1	-	-	2
57-63	-	5	1	-	2	4	6	2	1	1	3	1	1	2	3	2
44-56	11	14	12	9	10	15	7	10	8	12	10	13	11	16	8	11
37-43	5	4	4	10	4	5	7	8	8	8	5	8	6	5	7	4
30-36	2	2	4	2	3	-	2	3	3	4	1	1	1	2	4	3
29 and below	3	1	-	1	-	-	-	-	1	-	1	-	-	-	-	1
Total number of subjects	21	26	22	23	21	26	22	23	21	26	22	23	21	26	22	23

FNT = females, nontraditional
FT = females, traditional
MNT = males, nontraditional
MT = males, traditional

Interest and Vocational Program

Less than half the females enrolled in both traditional and nontraditional vocational programs were in training programs related to their interests as identified by the instrument used in this research. Eight females enrolled in auto mechanics, drafting, and machine shop had interests that corresponded closely with their vocational preparation. However, other feamales enrolled in the same areas showed no relationship between vocational preparation and interest. Eleven females training in traditional vocational programs showed a parallel between interest and occupational choice. Seven of the eleven were in the health occupations service area. Interest measures placed them in the categories labeled "medicine and medical technology" and "nursing and human care".

Eleven of the males enrolled in traditional vocational programs had interests that corresponded to their stated occupational preparation. Males enrolled in construction, machine operating and servicing, and trade and industrial programs had interests that fell within the cluster specified "technologies and trade cluster".

Males enrolled in nontraditional vocational programs had difficulty with portions of all instruments where reading was required. Only eight out of twenty-two were able to complete the interest assessment instrument in the time made available by the school. These responses did not represent half of the subjects, they were therefore not analyzed. Due to semester scheduling additional time could not be arranged.

Eliminating Sex Bias in Vocational Education

Responses from professionals in thirteen of the area vocational schools offering training programs in three or more vocational service areas indicated that the following activities represented what is always or almost always true of their school: 1) vocational training programs in their schools were equally accessible to students of both sexes; 2) female and male prospective students receive information about all available vocational programs and 3) facility tours, when conducted, provide for students of both sexes to see training areas for all vocational programs.

Respondents identified three activities that are sometimes true, or representative of their school in some situations. They were: 1) vocational education counseling processes and instruments used to identify student interest and aptitudes are free of sex bias; 2) training and employment opportunities are explained to prospective vocational students with emphasis on nontraditional programs for either sex; and 3) vocational teachers do not encourage students of both sexes to enroll in their classes because employment possibilities are limited for either sex in nontraditional occupations.

Activities which are rarely or never done at the area schools sampled include: 1) conducting special activities to inform prospective students about nontraditional vocational choices and 2) providing inservice education focused on eliminating sex bias in vocational education.

Responses indicated that in some schools teachers and school personnel actively recruit students of both sexes for all available vocational programs. In half the schools this is only sometimes true and in some schools this is rarely or never done.

Recommendations

Based on the findings of this limited study it appears that sex-role self perception is important in influencing vocational preparation. This indicates that career education free of sex bias would contribute positively to eliminating vocational training programs populated predominately by one sex. Exploration in nontraditional occupations, exposure to and association with individuals in nontraditional occupations would encourage students to consider vocational training in a non stereotyped occupation. Area vocational schools should include in their year's program regular features focused on eliminating sex bias in training programs.

Area vocational schools should provide inservice education to teachers and service personnel to inform them of legislation relating to Title IX and its implementation. Such training should include techniques for developing promotional and recruitment materials that are free of sex bias. Teachers should be assisted in self evaluation regarding attitudes and practices which fail to promote vocational education equity.

Personnel and teachers with responsibility for placement of students in business and industry should explain ways and means of improving the responsiveness of employers to hire trained workers regardless of the sex of the worker.

APPENDIX A

VOCATIONAL COURSES CATEGORIZED

Non Sex Oriented

Distributive Education
Data Processing
Radio Television
Graphic Arts
Ornamental Horticulture
Food Management
Auto Service

Traditional - Female

Child Care
Health Occupations
General Clerical
Stenographic
Dressmaking
Clothing
Consumer Homemaking
Cosmetology

Traditional - Male

Mechanics
Mechanical Drawing
Metal Working
Tool & Die
Wood Working
Trade & Industry
Agriculture Production
Animal Science
Appliance Repair
Body Fender
Carpentry
Drafting
Industrial Electric
Welding
Foundry
Sheet Metal
Masonry
Small Engine
Diesel Mechanic
Construction Maintenance
Air Conditioning
Forestry

APPENDIX B

Eliminating Sex Bias in Vocational Education

The following statements refer to practices and policies related to providing vocational programming at the secondary level to students of both sexes on an equal opportunity basis. Please read the statement and respond regarding the extent you believe the statement is descriptive of your school. Record your responses to each statement by writing the appropriate number in the blank to the left of each statement.

WRITE 1; if the statement represents what is always or almost always true of your school.

WRITE 2; if the statement represents what is sometimes true, or is true in some situations.

WRITE 3; if the statement represents what is rarely or never done at your school.

WRITE 0; if you do not know if the statement represents what occurs at your school.

(Your responses will be entirely anonymous. It will be impossible to identify respondents, their professional position or the school system in which they are employed.)

____ 1. Vocational training programs in my school are equally accessible to students of both sexes.

____ 2. Teachers and school personnel actively recruit students of both sexes for all vocational courses.

____ 3. Female and male prospective students receive information about all available vocational programs.

____ 4. Training and employment opportunities are explained to prospective vocational students with emphasis on non-traditional programs for either sex, i.e., welding or machine shop for females, cosmetology or health occupations for males.

____ 5. Facility tours, when conducted, provide for students of both sexes to see training areas for all vocational programs offered.

____ 6. Teachers of vocational courses currently and previously populated predominantly by only one sex welcome students of both sexes.

____ 7. Special activities are conducted by my school to inform prospective students about non-traditional vocational choices, i.e., panel of males successful in areas formerly populated by females and females who are successful auto mechanics, plumbers, etc.

____ 8. Employment possibilities following vocational training are limited for females in traditional male occupations and vice versa. This discourages vocational teachers from encouraging students of both sexes to enroll in their classes.

____ 9. Vocational education counseling processes and instruments used to identify student interest and apptitude are free of sex-bias.

____10. Inservice education focused on eliminating sex bias in vocational education has been conducted in my school.

APPENDIX C

Number of Schools in Sample Offering Courses

Number	Course	Number	Course
4	Agriculture Production	21	General Clerical
6	Air Conditioning	16	Graphic Arts
2	Animal Science	1	Greenhouse
4	Appliance Repair	20	Health Occupations
5	Auto Service	8	Home Management
1	Blueprint Reading	9	Housing
19	Body Fender	17	Industrial Electricity
9	Carpentry	1[illegible]	Interpersonal Relationships
12	Child Care	[illegible]	Landscaping
15	Construction Maintenance	4	Masonry
10	Cosmetology	22	Mechanics
9	Consumer Education	2	Millwork/Cabinet
12	Clothing	2	Metal Work
15	Data Processing	13	Ornamental Horticulture
7	Diesel Mechanics	8	Radio - T.V.
24	Distributive Education	3	Sheet Metal
17	Drafting	6	Small Engine
1	Dressmaking	10	Stenographer
8	Electronics	22	Tool & Die
14	Food Management	16	Trade & Industry
11	Food & Nutrition	1	Upholstery
1	Foundry	21	Welding
		1	Woodworking

Factor Scores - Females in Traditional Vocational Programs

Subject	Language Factor	Reality Factor	Motivational Factor	Psychomotor Factor
1	49	40	41	49
2	55	52	41	49
3	62	55	50	44
4	46	48	46	61
5	38	54	38	44
6	42	49	34	42
7	62	60	52	56
8	28	51	40	42
9	55	45	52	35
10	44	51	46	47
11	51	63	64	81
12	60	39	62	54
13	33	46	52	51
14	53	40	34	44
15	49	48	38	40
16	49	61	37	47
17	60	64	40	40
18	58	60	49	56
19	37	46	31	44
20	46	40	50	49
21	46	45	32	40
22	44	39	44	35
23	47	74	47	58
24	46	45	52	56
25	31	46	49	49
26	38	55	38	59

Factor Scores - Females in Nontraditional Vocational Programs

Subject	Language Factor	Reality Factor	Motivational Factor	Psychomotor Factor
1	51	33	58	65
2	44	42	45	44
3	46	58	49	54
4	33	45	37	44
5	35	40	37	54
6	37	80	34	30
7	51	36	41	44
8	20	46	26	42
9	53	43	50	40
10	46	49	41	37
11	49	71	49	72
12	55	48	47	47
13	42	54	55	54
14	38	49	34	40
15	55	46	40	37
16	42	58	44	61
17	47	54	41	54
18	16	46	37	40
19	22	55	35	49
20	38	42	47	51
21	46	36	43	44

Factor Scores - Males in Nontraditional Vocational Programs

Subject	Language Factor	Reality Factor	Motivational Factor	Psychomotor Factor
1	51	43	67	42
2	47	49	50	61
3	42	39	41	35
4	55	58	56	44
5	46	45	44	33
6	58	49	50	54
7	38	40	59	49
8	46	63	62	61
9	35	48	52	54
10	33	58	58	54
11	31	39	46	56
12	44	37	40	33
13	55	58	44	58
14	47	49	26	37
15	46	45	40	37
16	35	39	53	56
17	42	33	71	40
18	73	58	43	42
19	44	36	47	47
20	44	43	44	40
21	35	60	34	35
22	37	54	38	40

Factor Scores - Males in Traditional Vocational Programs

Subject	Language Factor	Reality Factor	Motivational Factor	Psychomotor Factor
1	38	58	52	56
2	37	45	46	49
3	56	39	37	30
4	55	52	41	49
5	47	45	53	58
6	37	40	44	54
7	49	43	38	30
8	35	43	40	37
9	40	46	46	65
10	18	43	40	35
11	40	34	40	40
12	44	39	44	44
13	40	49	44	44
14	37	45	38	54
15	40	49	35	49
16	42	39	56	44
17	71	52	47	61
18	46	40	44	26
19	35	34	44	40
20	49	34	49	47
21	42	46	41	44
22	47	49	56	67
23	53	58	58	40

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